IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A direct current motor, comprising:

a rotor including a rotation shaft and rotor coils;

a stator configured to apply a magnetic field to the rotor via magnetic poles of the stator opposing magnetic poles of the rotor;

a flat disc-shaped electrical parts mounting base board fixed on the rotation shaft such that the rotation shaft perpendicularly intersects the electrical parts mounting base board and such that a first flat surface of the electrical parts mounting base board faces the rotor, the flat disc-shaped electrical parts mounting base board ~~being formed~~ including a layer of a conductive material ~~on~~ into which a plane conductive pattern is formed and including a commutator section including a contact electrode part formed with the plane conductive layer pattern and connected to the rotor coils, the contact electrode part and the plane conductive layer pattern being directly formed on a second flat surface of the electrical parts mounting base board; ~~and~~

a pair of electrode brushes in sliding contact with the contact electrode part of the commutator section and configured to supply electric power to the rotor coils through the commutator section; and

a support base configured to support the rotation shaft of the rotor,

wherein the electrode brushes include respective external terminals configured to provide an external connection to the direct current motor, and

wherein the electrode brushes and the external terminals of the electrode brushes are fixed on the support base and the external terminals of the electrode buses protrude outward from an outside surface of the support base.

Claim 2 (Original): The direct current motor according to claim 1, further comprising:

a noise suppressing element provided on the electrical parts mounting base board and configured to suppress noise produced in the direct current motor.

Claim 3 (Previously Presented): The direct current motor according to claim 1, wherein respective electrode brushes are split into plural separate portions, and wherein sliding contacts of the separate portions with the contact electrode part of the commutator section cause a phase difference due to a shift of rotation angle positions of the sliding contacts of the separate portions relative to the contact electrode part.

Claim 4 (Canceled):

Claim 5 (Currently Amended): The direct current motor according to claim 1, further comprising:

at least one rotation detecting brush being arcuately curved outward from the rotation shaft and in sliding contact with the contact electrode part of the commutator section and configured to detect a signal on the commutator section indicative of an operation of the direct current motor.

Claim 6 (Currently Amended): The direct current motor according to claim 5, ~~further comprising:~~

~~a support base configured to support the rotation shaft of the rotor,~~

~~wherein the electrode brushes include respective external terminals configured to provide an external connection to the direct current motor,~~

wherein the at least one rotation detecting brush includes a respective external terminal configured to provide an external connection to the direct current motor, and

wherein the ~~electrode brushes, the at least one rotation detecting brush, the external terminals of the electrode brushes, and the~~ respective external terminal of the at least one rotation detecting brush ~~are~~ is fixed on the support base and also protrudes outward from the outside surface of the support base.

Claim 7 (Previously Presented): The direct current motor according to claim 5, wherein the electrode brushes are configured to contact the commutator section at representative first and second rotation angle positions 180° apart on the commutator section, and wherein the at least one rotation detecting brush is configured to contact the commutator section at a third rotation angle position such that an angle formed between the at least one rotation detecting brush and one of the electrode brushes is less than 180°/n, where n is the number of rotor magnetic poles and n is a natural number of 3 or greater.

Claim 8 (Original): The direct current motor according to claim 5, further comprising:

a noise suppressing element provided on the electrical parts mounting base board and configured to suppress noise produced in the direct current motor.

Claim 9 (Previously Presented): The direct current motor according to claim 5, wherein respective electrode brushes are split into plural separate portions, and wherein sliding contacts of the separate portions with the contact electrode part of the commutator section cause a phase difference due to a shift of rotation angle positions of the sliding contacts of the separate portions relative to the contact electrode part.

Claim 10 (Currently Amended): A direct current motor, comprising:

a rotor including a rotation shaft and rotor coils;

a stator configured to apply a magnetic field to the rotor via magnetic poles of the stator opposing magnetic poles of the rotor;

an electrical parts mounting base board fixed on the rotation shaft such that the rotation shaft perpendicularly intersects the electrical parts mounting base board, the electrical parts mounting base board ~~being formed~~ including a layer of a conductive material ~~on~~ into which a plane conductive pattern is formed and including a commutator section including a contact electrode part formed with the plane conductive layer pattern and connected to the rotor coils, the contact electrode part and the plane conductive layer pattern being directly formed on one surface of the electrical parts mounting base board; ~~and~~

a pair of electrode brushes, each pair of electrode brushes including first and second separate portions that are in sliding contact with the contact electrode part of the commutator section at respective sliding contact positions of a different distance from an axis of the rotation shaft, and configured to supply electric power to the rotor coils through the commutator section[[,]]; and

a support base configured to support the rotation shaft of the rotor,

wherein the electrode brushes include respective external terminals configured to provide an external connection to the direct current motor,

wherein the electrode brushes and the external terminals of the electrode brushes are fixed on the support base and the external terminals of the electrode buses protrude outward from an outside surface of the support base, and

wherein the respective sliding contact positions of the electrode brushes with the contact electrode part are shifted in the radial direction.

Claim 11 (Previously Presented): The direct current motor according to Claim 10, further comprising:

at least one rotation detecting brush in sliding contact with the contact electrode part of the commutator section at at least one sliding contact position and configured to detect a signal on the commutator section indicative of an operation of the direct current motor,

wherein the respective sliding contact positions of the electrode brushes and the at least one sliding contact position of the at least one rotation detecting brush are arranged at a different distance from the axis of the rotation shaft, and are shifted from each other in the radial direction.

Claim 12 (Currently Amended): A direct current motor, comprising:

a rotor including a rotation shaft and rotor coils;

means for applying a magnetic field to the rotor;

a flat disc-shaped electrical parts mounting base board fixed on the rotation shaft such that the rotation shaft perpendicularly intersects to the electrical parts mounting base board and such that a first flat surface of the electrical parts mounting base board faces the rotor, the flat disc-shaped electrical parts mounting base board ~~being formed~~ including a layer of a conductive material ~~on~~ into which a plane conductive pattern is formed and including a commutator section including a contact electrode part formed with the plane conductive layer pattern and connected to the rotor coils, the contact electrode part and the plane conductive layer pattern being directly formed on a second flat surface of the electrical parts mounting base board; ~~and~~

means for supplying electric power to the rotor coils through the commutator section, the supplying means being in sliding contact with the contact electrode part of the commutator section;

means for supporting the rotation shaft of the rotor; and

a first means for connecting externally to the supplying means,

wherein the supplying means and the first connecting means are fixed on the supporting means, and the first connecting means externally protrudes outward from an outside surface of the supporting means.

Claim 13 (Original): The direct current motor according to claim 12, further comprising:

means for suppressing noise produced in the direct current motor,

wherein the suppressing means is provided on the electrical parts mounting base board.

Claim 14 (Canceled).

Claim 15 (Currently Amended): The direct current motor according to claim 12, further comprising:

means for detecting a signal on the commutator section indicative of an operation of the direct current motor, the detecting means being arcuately curved outward from the rotation shaft and being in sliding contact with the contact electrode part of the commutator section.

Claim 16 (Currently Amended): The direct current motor according to claim 15, further comprising:

~~means for supporting the rotation shaft of the rotor;~~

~~a first means for connecting externally to the supplying means; and~~

a second means for connecting externally to the detecting means,

wherein the ~~supplying means, the first and~~ second connecting means are fixed on the supporting means, and the second connecting means also protrudes outward from the outside surface of the supporting means.

Claim 17 (Original): The direct current motor according to claim 15, further comprising:

means for suppressing noise produced in the direct current motor,

wherein the suppressing means is provided on the electrical parts mounting base board.

Claim 18 (Currently Amended): A direct current motor comprising:

a rotor including a rotation shaft and rotor coils;

means for applying a magnetic field to the rotor;

an electrical parts mounting base board fixed on the rotation shaft such that the rotation shaft perpendicularly intersects to the electrical parts mounting base board, the electrical parts mounting base board ~~being formed~~ including a layer of a conductive material ~~on~~ into which a plane conductive pattern is formed and including a commutator section including a contact electrode part formed with the plane conductive layer pattern and connected to the rotor coils, the contact electrode part and the plane conductive layer pattern being directly formed on one surface of the electrical parts mounting base board; ~~and~~

means for supplying electric power to the rotor coils through the commutator section, the supplying means including a pair of electrode brushes each with first and second separate portions that are in sliding contact with the contact electrode part of the commutator section at respective sliding contact positions of a different distance from an axis of the rotation shaft[[,]];

means for supporting the rotation shaft of the rotor; and

a first means for connecting externally to the supplying means,

wherein the supplying means and the first connecting means are fixed on the supporting means, and the first connecting means externally protrudes outward from an outside surface of the support means, and

wherein the respective sliding contact positions of the supplying means with the contact electrode part are shifted in the radial direction.

Claim 19 (Previously Presented): The direct current motor according to claim 18, further comprising:

means for detecting a signal on the commutator section indicative of an operation of the direct current motor, the detecting means being in sliding contact with the contact electrode part of the commutator section at at least one sliding contact position,

wherein the respective sliding contact positions of the supplying means and the at least one sliding contact position of the detecting means are arranged at a different distance from the axis of the rotation shaft, and are shifted from each other in the radial direction.

Claim 20 (Currently Amended): A method of making a direct current motor with a rotor including a rotation shaft and rotor coils, a stator, a flat disc-shaped electrical parts mounting base board positioned such that a first flat surface of the electrical parts mounting

base board faces the rotor, the electrical parts mounting base board ~~being formed~~ including a layer of a conductive material ~~on~~ into which a plane conductive pattern is formed and including a commutator section including a contact electrode part formed with the plane conductive layer pattern, and a pair of electrode brushes, said method comprising the steps of:

forming the contact electrode part of the commutator section and the plane conductive layer pattern directly on a second flat surface of the electrical parts mounting base board;

fixing the electrical parts mounting base board on the rotation shaft such that the rotation shaft perpendicularly intersects the electrical parts mounting base board;

providing the pair of electrode brushes on a support base; and

assembling the support base onto the electrical parts mounting base board and the rotation shaft such that the electrode brushes are in sliding contact with the contact electrode part of the commutator section in the same plane, and such that the external terminals of the electrode brushes protrude outward from an outside surface of the support base.

Claim 21 (Original): The method of claim 20, further comprising the step of:

providing a noise suppressing element on the electrical parts mounting base board.

Claim 22 (Previously Presented): The method of claim 20, wherein the providing step includes:

arranging the pair of electrode brushes such that the electrode brushes are in sliding contact with the contact electrode part of the commutator section at respective sliding contact positions of a different distance from an axis of the rotation shaft, and the respective sliding contact positions of the electrode brushes are shifted in the radial direction.

Claim 23 (Currently Amended): The method of claim 20, wherein the direct current motor further includes at least one rotation detecting brush,

wherein the providing step provides the pair of electrode brushes and the at least one rotation detecting brush on [[a]] the support base, and

wherein the assembling step assembles the support base onto the electrical parts mounting base board and the rotation shaft such that the electrode brushes and the at least one rotation detecting brush are in sliding contact with the contact electrode part of the commutator section in the same plane, and such that external terminals of the rotation detecting brush also protrude outward from the outside surface of the support base.

Claim 24 (Original): The method of claim 23, further comprising the step of:

providing a noise suppressing element on the electrical parts mounting base board.

Claim 25 (Previously Presented): The method of claim 23, wherein the providing step includes:

arranging the pair of electrode brushes and the at least one rotation detecting brush such that respective sliding contact positions of the electrode brushes and at least one sliding contact position of the at least one rotation detecting brush with the contact electrode part of the commutator section are at a different distance from an axis of the rotation shaft, and are shifted from each other in the radial direction.

Claim 26 (Currently Amended): An apparatus having a direct current motor, comprising:

a rotor including a rotation shaft and rotor coils;

a stator configured to apply a magnetic field to the rotor via magnetic poles of the stator opposing magnetic poles of the rotor;

a flat-disc-shaped electrical parts mounting base board fixed on the rotation shaft such that the rotation shaft perpendicularly intersects the electrical parts mounting base board and such that a first flat surface of the electrical parts mounting base board faces the rotor, the flat disc-shaped electrical parts mounting base board ~~being formed~~ including a layer of a conductive material ~~on~~ into which a plane conductive pattern is formed and including a commutator section including a contact electrode part formed with the plane conductive layer pattern and connected to the rotor coils, the contact electrode part and the plane conductive layer pattern being directly formed on a second flat surface of the electrical parts mounting base board; ~~and~~

a pair of electrode brushes in sliding contact with the contact electrode part of the commutator section and configured to supply electric power to the rotor coils through the commutator section; and

a support base configured to support the rotation shaft of the rotor,

wherein the electrode brushes include respective external terminals configured to provide an external connection to the direct current motor, and

wherein the electrode brushes and the external terminals of the electrode brushes are fixed on the support base and the external terminals of the electrode buses protrude outward from an outside surface of the support base.

Claim 27 (Currently Amended): The apparatus according to claim 26, further comprising:

at least one rotation detecting brush being accurately curved outward from the rotation shaft and in sliding contact with the contact electrode part of the commutator section and

configured to detect a signal on the commutator indicative of an operation of the direct current motor.

Claim 28 (Currently Amended): An apparatus having a direct current motor comprising:

a rotor including a rotation shaft and rotor coils;

a stator configured to apply a magnetic field to the rotor via magnetic poles of the stator opposing magnetic poles of the rotor;

an electrical parts mounting base board fixed on the rotation shaft such that the rotation shaft perpendicularly intersects the electrical parts mounting base board, the electrical parts mounting base board ~~being formed~~ including a layer of a conductive material ~~on~~ into which a plane conductive pattern is formed and including a commutator section including a contact electrode part formed with the plane conductive layer pattern and connected to the rotor coils, the contact electrode part and the plane conductive layer pattern being directly formed on the electrical parts mounting base board; ~~and~~

a pair of electrode brushes, each pair of electrode brushes including first and second separate portions that are in sliding contact with the contact electrode part of the commutator section at respective sliding contact positions of a different distance from an axis of the rotation shaft, and configured to supply electric power to the rotor coils through the commutator section[[,]]; and

a support base configured to support the rotation shaft of the rotor,

wherein the electrode brushes include respective external terminals configured to provide an external connection to the direct current motor,

wherein the electrode brushes and the external terminals of the electrode brushes are fixed on the support base and the external terminals of the electrode buses protrude outward from an outside surface of the support base, and

wherein the respective sliding contact positions of the electrode brushes with the contact electrode part are shifted in the radial direction.

Claim 29 (Currently Amended): The apparatus according to claim 28, further comprising:

at least one rotation detecting brush being arcuately curved outward from the rotation shaft and in sliding contact with the contact electrode part of the commutator section at at least one sliding contact position and configured to detect a signal on the commutator section indicative of an operation of the direct current motor,

wherein the respective sliding contact positions of the electrode brushes and the at least one sliding contact position of the at least one rotation detecting brush are arranged at a different distance from the axis of the rotation shaft, and are shifted from each other in the radial direction.